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EXAMINER

NGUYEN, LUONG TRUNG

ART UNIT

PAPER NUMBER

2612

DATE MAILED: 12/19/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/434,703

Applicant(s)
Bodnar et al.

Examiner
Luong Nguyen

Art Unit
2612



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-68 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-68 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5 and 11 20) ☐ Other:

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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-15, 18-21, 23-34, 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rabbani et al. (US 5,412,427) in view of Wang et al. (US 5,682,152) further in view of Bauchspies (US 6,008,847) .

Regarding claim 1, Rabbani et al. disclose an electronic camera utilizing image compression feedback for improved color processing, comprising recording luminosity information at a first device (the green and color difference signals are stored in storage module 28 of the digital camera (first device), figure 7, column 6, lines 5-20); generating compressed luminosity information at the first device (figures 5-7, column 5, line 37 through column 6, line 20); transmitting said compressed luminosity information to a second device (the compressed signal could be downloaded to the personal computer (second device, column 6, lines 15-20). Rabbani et al. fail to specifically disclose applying a wavelet transform, quantization, and compression to the luminosity information. However, Wang et al. teach a compression algorithm includes a transform stage which uses a wavelet transform algorithm; a quantization stage (column 1, lines 45-65). Therefore, it would have been obvious to one of ordinary skill in the art at the

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time the invention was made to modify the device in Rabbani et al. by the teaching of Wang et al. in order to provide an improved lossy compression algorithm that is particularly efficient for compressing graphics images (col. 1, lines 39-42).

Rabbani et al. and Wang et al. fail to specifically disclose restoring said luminosity information at the second device and converting said luminosity information at the second device into a color image. However, Bauchspies teach a temporal compression and decompression system in which the compressed video stream 105 is transmitted over the telephone line to a remote computer 92 (target device) for subsequent temporal decompression 106 (restoring, figure 2, column 5, lines 40-44). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Rabbani et al. and Wang et al. by the teaching of Bauchspies in order to display the image on the monitor of the computer.

Regarding claims 3 and 23, Rabbani et al. disclose light-level information for representing an image that has been digitally captured at the first device (col. 5, lines 20-25).

Regarding claim 4, Rabbani et al. disclose applying generic binary compression (col. 5, lines 65-67).

Regarding claims 5 and 25, Wang et al. disclose run-length encoding (see abstract).

Regarding claims 6 and 26, Wang et al. disclose Huffman coding (see abstract).

Regarding claims 7 and 27, Bauchspies discloses reversing said compression that occurred at the first device (decompression 106, figure 2, column 5, lines 40-44).

Regarding claims 8 and 28, Rabbani et al. disclose transmitting said compressed luminosity information in a wire-based manner (cable interface, column 6, lines 15-20).

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Regarding claims 9 and 29, Rabbani et al., Wang et al., Bauchspies fail to specifically disclose transmitting said compressed luminosity information using a serial communication port. However, Rabbani et al. disclose transmitting said compressed luminosity information in a wire-based manner. It would have been obvious to include a serial communication port in the system in order to let the system can communicate with many devices at the same time.

Regarding claims 10 and 30, Rabbani et al. disclose interpolating color information (interpolation 24, figure 7).

Regarding claims 11 and 31, Bauchspies discloses apply a YUV transformation at second device (col. 5, lines 45-55).

Regarding claims 12 and 32, Bauchspies discloses converting color image into a standard file format at the second device (Huffman data, col. 3, lines 45-55).

Regarding claims 13 and 33, Rabbani et al. disclose a JPEG format (col. 4, lines 60-65).

Regarding claims 14 and 34, Rabbani et al. disclose a JPEG compression (col. 4, lines 60-65).

Regarding claim 15, it is well-known in the art to transmit information from a digital camera to a computer using a packet-based communication protocol.

As for claims 18-20, 38-40, Rabbani et al. disclose the compressed signals could be downloaded to the computer. It would have been obvious that lower-quality image is converted into higher-quality image in order to let the user could see a higher quality on the display.

Regarding claim 21, all the limitations are contained in claim 1. Therefore, see examiner's comments regarding claim 1.

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Regarding claim 24, Wang et al. disclose wavelet transform, and apply compression to the transformed sensor image (col. 1, lines 45-65).

3. Claims 2, 16-17, 22, 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rabbani et al. (US 5,412,427) in view of Wang et al. (US 5,682,152) and Bauchspies (US 6,008,847) further in view of Fukuoka (US 5,754,227).

Regarding claims 2, 22, 35, Rabbani et al., Wang et al. and Bauchspies fail to specifically disclose wherein said transmitting step is performed in a wireless manner. However, Fukuoka teaches images captured by the camera can be transferred through the I/O card 15 which functions as modem connected to an on-line service such as American On Line (column 3, lines 50-60). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Rabbani et al., Wang et al. and Bauchspies by the teaching of Fukuoka in order to transmit the image to a remote device without using cable.

Regarding claims 16, 36 Fukuoka discloses a digital camera (digital camera 30, figure 3, column 4, lines 34-50); computer (computer 33, figure 3, column 4, lines 34-50); cellular phone device (cellular phone, figure 3, column 5, lines 40-45).

Regarding claims 17 and 37, Fukuoka discloses computer connect to Internet which makes the color image available to multiple users (American On Line, col. 3, lines 55-60).

4. Claim 41, 43-44, 47-54, 58-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rabbani et al. (US 5,412,427) in view of Bauchspies (US 6,008,847).

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Regarding claim 41, Rabbani et al. disclose an electronic camera utilizing image compression feedback for improved color processing, comprising an imager, disclosed as image sensor 40 (figure 7, column 5, lines 1-36); compression module (compression stages 16a, 16b, 16c, figure 7, column 5, lines 40-55); a communication link (cable interface, column 6, lines 15-20); target device (personal computer, column 6, lines 15-20). Rabbani et al. fail to specifically disclose a decompression module at the target device. However, Bauchspies teach a temporal compression and decompression system in which the compressed video stream 105 is transmitted over the telephone line to a remote computer 92 (target device) for subsequent temporal decompression 106 (figure 2, column 5, lines 40-44). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Rabbani et al. by the teaching of Bauchspies in order to display the image on the monitor of the computer.

Regarding claim 43, Rabbani et al. disclose luminosity information comprises brightness information for representing an image that has been digitally captured at the imager (figures 6-7).

Regarding claim 44, Rabbani et al. disclose generic binary compression module (col. 5, lines 65-67).

Regarding claim 47, Bauchspies discloses reversing generic binary compression that has been applied at the imager (decompression 106, figure 2, column 5, lines 40-44).

Regarding claim 48, Rabbani et al. disclose said communication link transmits said compressed luminosity information in a wire-based manner (cable interface, column 6, lines 15-20).

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Regarding claim 49, Rabbani et al., Wang et al., Bauchspies fail to specifically disclose said communication link transmits said compressed luminosity information using a serial communication port. However, Rabbani et al. disclose transmitting said compressed luminosity information in a wire-based manner. It would have been obvious to include a serial communication port in the system in order to let the system can communicate with many devices at the same time.

Regarding claim 50, Rabbani et al. disclose interpolating color information (interpolation 24, figure 7).

Regarding claim 51, Bauchspies discloses apply a YUV transformation at second device (col. 5, lines 45-55).

Regarding claim 52, Bauchspies discloses converting color image into a standard file format at the second device (Huffman data, col. 3, lines 45-55).

Regarding claim 53, Rabbani et al. disclose a JPEG format (col. 4, lines 60-65).

Regarding claims 54, Rabbani et al. disclose a JPEG compression (col. 4, lines 60-65).

As for claims 58-60, Rabbani et al. disclose the compressed signals could be downloaded to the computer. It would have been obvious that lower-quality image is converted into higher-quality image in order to let the user could see a higher quality on the display.

Regarding claim 61, Rabbani et al. disclose a digital camera (figure 3, col. 5, lines 1-5).

Regarding claim 62, Rabbani et al. disclose a desktop computer (personal computer, col. 6, lines 15-20).

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Regarding claim 63, Bauchspies discloses a server computer (computer 92, figure 2, col. 5, line 43).

Regarding claim 64, Rabbani et al. and Bauchspies fail to disclose a CMOS image sensor. However, it is well-known in the art to use a CMOS image sensor to capture image.

Regarding claim 65, Rabbani et al. and Bauchspies fail to disclose a CCD image sensor. However, it is well-known in the art to use a CCD image sensor to capture image.

Regarding claim 66, Rabbani et al. disclose gray-scale luminosity information (light levels, col. 5, line 25).

5. Claim 42, 55-57 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rabbani et al. (US 5,412,427) in view of Bauchspies (US 6,008,847) further in view of Fukuoka (US 5,754,227).

Regarding claim 42, Rabbani et al. and Bauchspies fail to specifically disclose a wireless communication link. However, Fukuoka teaches images captured by the camera can be transferred through the I/O card 15 which functions as modem connected to an on-line service such as American On Line (column 3, lines 50-60). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Rabbani et al. and Bauchspies by the teaching of Fukuoka in order to transmit the image to a remote device without using cable.

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Regarding claim 55, Fukuoka discloses a digital camera (digital camera 30, figure 3, column 4, lines 34-50); computer (computer 33, figure 3, column 4, lines 34-50); cellular phone device (cellular phone, figure 3, column 5, lines 40-45).

Regarding claim 56, Fukuoka discloses wherein said communication link is coupled to the cellular phone for establishing a wireless communication session between the digital camera and the computer (column 5, lines 40-48).

Regarding claim 57, Fukuoka discloses computer connect to Internet (American On Line, column 3, lines 55-60).

6. Claims 45-46, 67-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rabbani et al. (US 5,412,427) in view of Bauchspies (US 6,008,847) further in view of Wang et al. (US 5,682,152).

Regarding claim 45, Rabbani et al. and Bauchspies fail to specifically disclose said generic binary compression module applies run-length encoding. However, Wang et al. teach a compression applies run-length encoding (see abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Rabbani et al. and Bauchspies by the teaching of Wang et al. in order to provide an improved lossy compression algorithm that is particularly efficient for compressing graphics images (col. 1, lines 39-42).

Regarding claim 46, Wang et al. disclose Huffman coding (see abstract).

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Regarding claims 67-68, Wang et al. disclose wavelet transform engine (wavelet transform algorithm, col. 1, lines 55-65).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Takahashi (US 5,798,794) discloses wavelet transform subband coding with frequency-dependent quantization step.

Acharya et al. (US 6,154,493) disclose compression of color images based on 2-dimensional discrete wavelet transform yielding a perceptually lossless image.

Mitchell et al. (US 6,243,420) disclose multi-spectral image compression and transformation.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Luong Nguyen** whose telephone number is **(703) 308-9297**. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Wendy Garber**, can be reach on **(703) 305-4929**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

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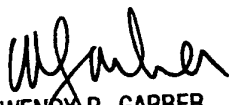
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(703) 872 - 9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal drive,
Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding
should be directed to the Technology Center 2600 Customer Service Office whose telephone
number is (703) 306-0377.

LN LN
12/15/2001


WENDY R. GARBER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600